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Installation Instructions For

HB-16490 AGC ADAPTER

for

Models

Models 459 and 459A (TS-330/TSM)

Crystal Impedance Meters

RADIO FREQUENCY LABORATORIES, INC.

BOONTON, NEW JERSEY



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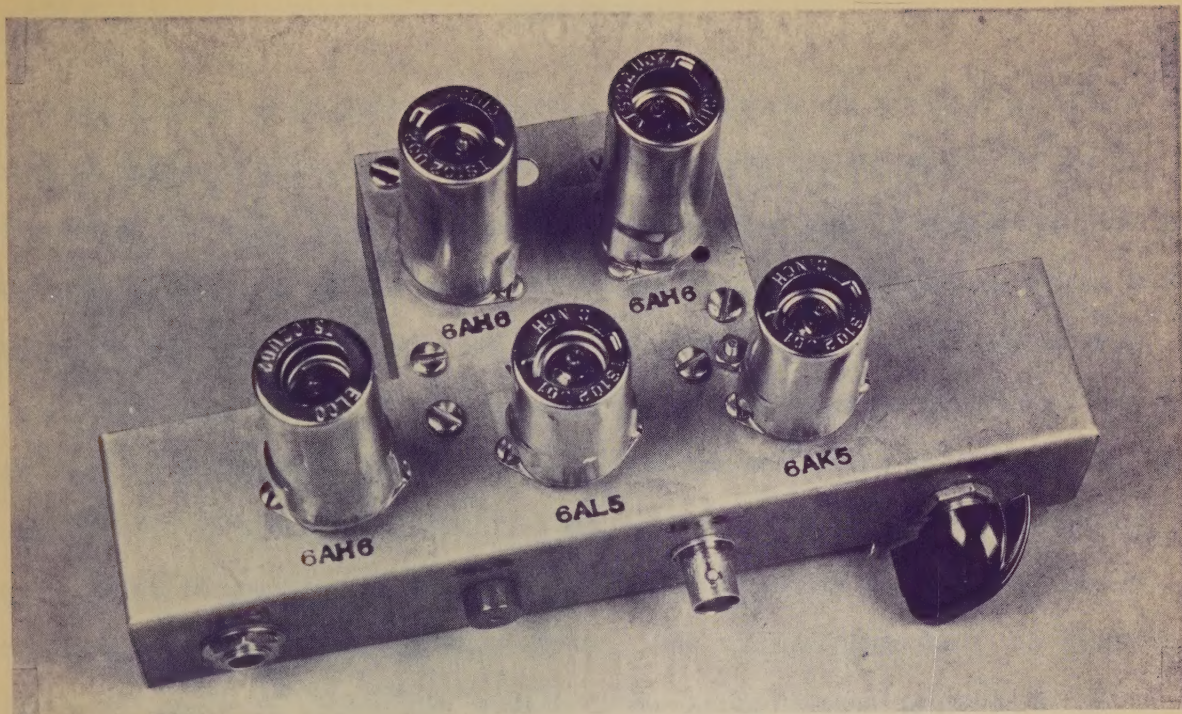


Figure 1. AGC Adapter HB-1 490

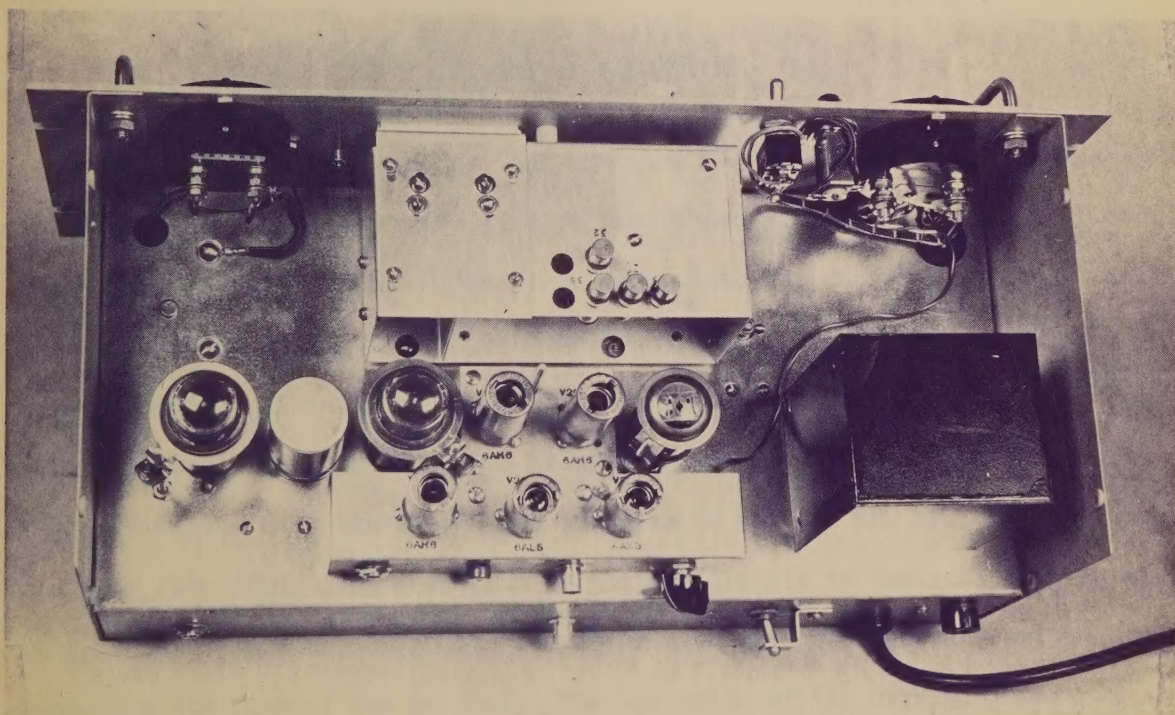


Figure 2. Adapter Mounted In C. I. Meter

DESCRIPTION

The purpose of HB-16490 AGC Adapter is to control the oscillation of the crystal impedance meter at a constant low power level in the range of 1 to 10 microwatts for aging tests. For drive levels greater than 10 microwatts, the AGC GAIN switch S201 on the rear of the adapter may be positioned to reduce the loop gain and permit a greater magnitude of oscillation. The OUT switch position allows the crystal impedance meter to function normally for the testing of crystals at 2 milliwatt drive levels. Beyond the use of the AGC Adapter for crystal aging tests, it provides an amplified output for electronic frequency counters and eliminates the need for additional amplifiers usually required to amplify the output of the crystal impedance meter. The adapter plugs into the original 6V6 oscillator tube socket and requires five wiring changes as given in the installation section.

THEORY OF OPERATION

The Adapter uses five tubes, one of which (V201) replaces the original 6V6 oscillator. As shown in Figure 3, type 6AH6 tubes are used for the oscillator, a wide-band amplifier and a series regulating tube for the DC currents to the plate and screen of the oscillator tube. A type 6AK5 tube (V205) is used as a cathode follower to bring out sufficient signal to operate an electronic frequency counter. The output of the broadband amplifier V202 is rectified and doubled with the 6AL5 type tube V203 and used to control the grid of the series regulator tube V204. The loop gain of the AGC circuit is controlled by varying the grid resistance of the series regulator tube with the AGC GAIN switch S201 mounted on the rear of the Adapter. The operation of the crystal impedance meter is identical to the original equipment except that the front panel grid

current meter does not receive sufficient current to operate and is replaced functionally by measuring the output of the rectifier-doubler at jack J201, AGC CURRENT, with a multirange DC microammeter covering the ranges of 50 uADC to 10,000 uADC. A test jack J203, OSC PLATE VOLTAGE, at the rear of the chassis permits measurement of the plate voltage supplied the oscillator circuit. This voltage can be correlated to drive level for a particular crystal. The output at BNC jack J202 is used to operate an electronic counter.

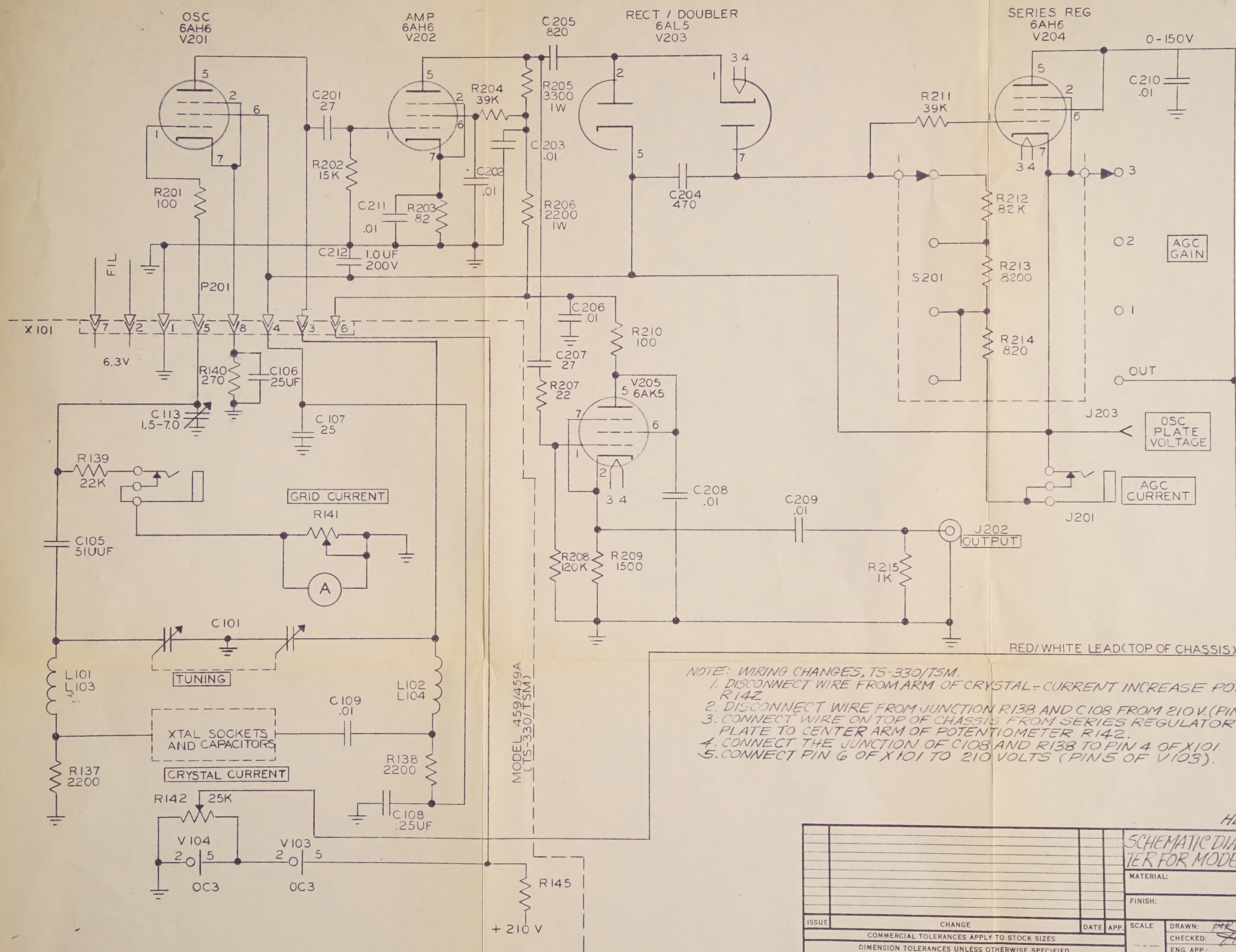
FIELD INSTALLATION

When the HB-16490 AGC Adapter is installed on Model 459 and Model 459A (TS-330/TSM) the back of the cover must be punched to expose the jacks and control of the Adapter. This can be easily accomplished by using Marker Plate HB-16495 as a template to locate the hole centers. Punch 0.765 dia. holes. Note that the template is keyed from an adjacent cover mounting screw. Locate this screw by plugging the Adapter into the 6V6 socket and noting relationship of hole and OUTPUT jack.

The wiring changes on the Model 459 (TS-330/TSM) necessary to install the Adapter may be done by referring to the schematic diagram of Figure 3 and performing the operations listed below:

1. Disconnect wire from arm of crystal-current increase potentiometer R142.
2. Disconnect wire from junction R138 and C108 from 210 V (Pin 5 of V103).
3. Connect wire on top of chassis from series regulator V204 (6AH6) plate to center arm of potentiometer R142.
4. Connect the junction of C108 and R138 to pin 4 of X101.
5. Connect pin 6 of X101 to 210 volts (Pin 5 of V103).

After completion of the wiring changes check the equipment wiring against the schematic diagram.



HB-16490

SCHEMATIC DIAGRAM, AGC ADAPTER FOR MODEL 459, 459A

MATERIAL:

FINISH:

ISSUE	CHANGE	DATE	APP.	SCALE	DRAWN:	DATE:
					PR	12-1-61
					CHECKED:	12-1-61
					ENG. APP.:	DATE:

COMMERCIAL TOLERANCES APPLY TO STOCK SIZES

DIMENSION TOLERANCES UNLESS OTHERWISE SPECIFIED

DECIMAL ± FRACTIONAL ± ANGULAR ±

RADIO FREQUENCY LABORATORIES, INC. BOONTON, N. J.

DWG. NO. HC-16496-

SHEET (OF 1)

